



T02



SCS077



SIS038

**Swiss Calibration Centre T02 for thermal energy**  
**Calibration Service SCS077 for heat, water and oil measurements**  
**Inspection Service SIS038 for heat and hot water meters**

Our calibration facilities have been authorised and accredited by the Swiss Federal Office of Metrology (metas) in Bern as a calibration centre T02 and by the Swiss Accreditation Service SAS as a calibration service SCS077 in accordance with ISO/IEC 17025 for the flow measurement of water, heat and oil. In this function, we regularly test cold water meters that come back from the field after replacement. This allows us to make well-founded statements about the long-term behaviour of the meters. The graphic evaluation is updated biannually.

### Scheme:

1. Selection criteria, which provides reliable information about the long-term measurement stability
2. Standards / regulations
3. Measuring and testing procedures
4. Results

### 1. Selection criteria

A representative cross section of cold water meters from mains operation with a period of use of 10 to 28 years was selected for evaluation.

- Brand: Aquametro
- Types: PMK and ZFTP
- Multi-jet vane wheel meter
- Nominal size 20 mm with threaded connections
- Nominal pressure 16 bar

### 2. Standards / regulations

Our procedures are carried out in accordance with ISO/IEC 17025, ISO 9001:2000 and the SVGW Directive W/TPW 108. The accreditation of the calibration facilities guarantees traceability of the results to the national measurement standards of Switzerland at metas in Bern.

### 3. Measuring and testing procedures

- Visual checks for damage, imperviousness and contamination (strainer)
  - Hydraulic tests at the following flow rates:
- |                    |      |     |
|--------------------|------|-----|
| ⇒ Q <sub>n</sub>   | 2500 | l/h |
| ⇒ Q <sub>min</sub> | 30   | l/h |
| ⇒ Q <sub>max</sub> | 5000 | l/h |

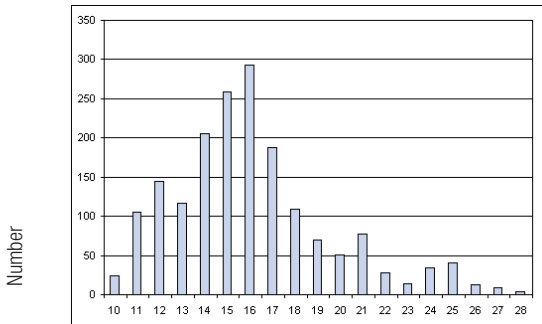
### 4. Results

Measuring accuracy corresponds to the prescribed accuracy.  
(Limits in accordance with SVGW Directive W/TPW 108)

Diagram 1 shows the number of returned meters as a function of average period of use.

Diagrams 2 to 4 show the statistical evaluations of the relative measuring errors of the returned meters.

**For the Aquametro domestic water meters types PMK + ZFTP (DN 20), this document serves as evidence of active product monitoring and compliance with the product requirements in accordance with ISO 9001:2000.**

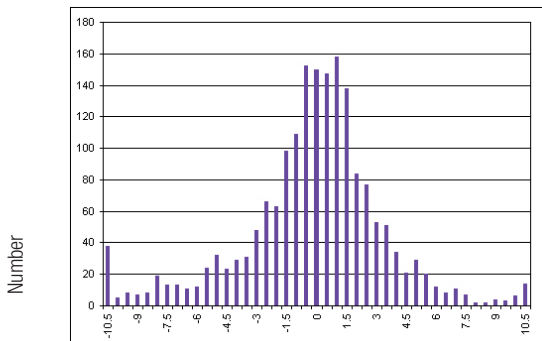


Period of use in years based on 2010

Average period of use of the returned meters

- Brand: Aquametro
- Types: PMK + ZFTP
- Nominal size: DN 20

Summary of the test results in accordance with SVGW Directive W/TPW 108.

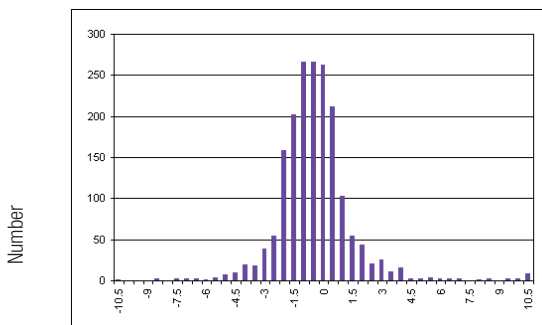


Relative measuring error in %

In the lower flow rate range at

**$Q_{min} = 30 \text{ l/h}$**

the maximum permissible error limit in service is  $\pm 10\%$ . This is met by 97.2 % of the returned meters. Meters with a period of use of over 15 years do not fully meet this error limit.

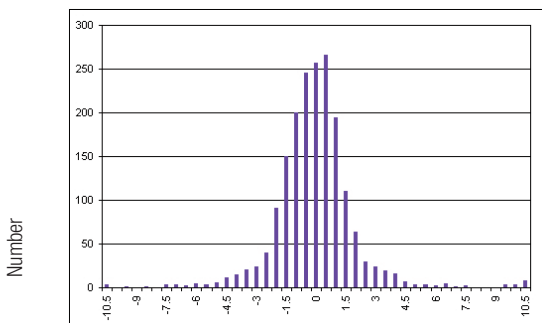


Relative measuring error in %

The maximum permissible error limit in service in the upper flow rate range at

**$Q_n = 2500 \text{ l/h}$**

is  $\pm 4\%$ . Of all the returned meters, 96.5 % meet this limit. Meters with a period of use of over 15 years do not fully meet this error limit.



Relative measuring error in %

At a flow rate of

**$Q_{max} = 5000 \text{ l/h}$**

the maximum permissible error limit in service of  $\pm 4\%$  is met by 96 % of the return meters tested. Meters with a period of use of over 15 years do not fully meet this error limit.

The results prove the high long-term measurement stability of the meters.